CLAIMS

1. A position sensor circuit for determining the position of an actuator, said circuit including a variable inductor, a capacitor, and an oscillator circuit, and wherein the inductor is separated from ground by the capacitor, and wherein the variable inductor and capacitor are reactive components of the oscillator circuit, and wherein output of the oscillator circuit is used to indicate the relative position of the actuator relative to the inductor.

2. A position sensor circuit with a variable inductor in series with a capacitor.

3. A actuator position sensor circuit with a variable inductor and capacitor as reactive components of a oscillator circuit, wherein the output of that circuit is taken as indication of position of an actuator relative to the inductor.

4. A position sensor circuit where a feedback path from the connection between the variable inductor and the capacitor is provided, the he feedback path containing a capacitor to block DC current, and the feedback signal being fed to an amplifier.

5. A position sensor circuit where frequency is taken as output.

6. A position sensor circuit where the sine wave oscillator output is rectified to a DC signal for output.

7. A position sensor circuit where a square wave is taken as output.

8. A position sensor circuit where the signal from the amplifier is fed to a frequency to voltage conversion circuit signal.

9. A position sensor circuit as shown in Fig 3.

10. A frequency to voltage conversion circuit as shown in Fig 4.

11. A variable reluctance sensor in which soft ferrite is used to make the actuator.

12. A variable reluctance sensor in which ferrite is used to shield the coil.

13. A variable reluctance sensor in which the coil windings are distributed so that there is more density toward the ends of the coil.

14. A variable reluctance sensor where the sensor coil is shorter than the measuring range and the actuator has a tapered end.

15. A variable reluctance sensor where the sensor coil is shorter than the measuring range and the actuator is a copper region on a midpoint of a steel shaft, wherein that region has a leading edge which is helical and/or pointed.

16. A variable reluctance sensor for detecting angular position as shown in Fig 13 where the actuator has a spiral shape and the coil is shorter than the radial stroke of the actuator.

17. An acceleration sensor that is a variable reluctance device with the actuator held in position by an elastic support.

18. A proximity sensor in which the core made of magnetic material has an E shaped cross section and the E shape has a thickness greater than zero.

19. Use of a the sensor of claim 14 with a cam shaped actuator for detecting radial position as shown in Fig 17.

20. Use of two sensors of claim 14 with their coils wired in series or parallel and facing each other with a cam shaped actuator between.

21. Use of a the sensor of claim 14 with a metal shaft that has a bias cut end for detecting radial position of the shaft as shown in Fig 20.

22. Use of the sensor of claim 14 with a magnetic steel shaft with copper coated section. That copper coated section having an edge that forms a helix or pointed shape.

23. A digital output circuit as depicted by Fig 24 in which the frequency of the sensor circuit of Fig 3 sources the input to a counter, and wherein a controller's onboard clock sets the count window, and wherein the counter counts the cycles of the sensor oscillator, and wherein the counted cycles are used to create output.

24. A digital output circuit as depicted by Fig 25 in which the frequency of the sensor circuit of Fig 3 is used to set the gate duration of a gate controller, and wherein the digital output circuit counts the cycles of a free running oscillator of high frequency relative to the sensor circuit, and wherein the counted cycles are used to create output.